

PRE-COOLER FOR REDUCING CRYOGEN CONSUMPTION

Abstract

MRI system 10 is provided. The MRI system 10 includes a magnet assembly 12. A first cryogen cooling fluid 20 is utilized to cool the magnet assembly 12. A first supply line 16 communicates the first cryogen cooling fluid 20 to the magnet assembly 12. A first return line 18 communicates the first cryogen cooling fluid 20 away from the magnet assembly 12. A blower assembly 22 is positioned between and in communication with the first supply line 16 and the first return line 18. A regenerative heat exchanger 36 is in communication with the first supply line 16 and the first return line 18. The regenerative heat exchanger 36 transfers thermal energy 29 from the first supply line 16 to the first return line 18. The regenerative heat exchanger 36 is positioned between the blower assembly 22 and the magnet assembly 12. A second supply line 28 transports a second cryogen fluid 26 through a pre-cooler assembly 24. The pre-cooler assembly 24 is positioned between the regenerative heat exchanger 36 and the magnet assembly 12. The pre-cooler assembly 24 transfers thermal energy 29 from the first

supply line 16 to the second supply line 28.